EXHIBIT 2

- VOLUME M -
IN THE UNITED STATES DISTRICT COURT
IN AND FOR THE DISTRICT OF DELAWARE

CORDIS CORPORATION, Plaintiff vs. MEDTRONIC AVE, INC., et al.	:	CIVIL ACTION NO. 97-550 (SLR)
BOSTON SCIENTIFIC CORPORATION, et al., Plaintiffs vs. ETHICON, INC., et al., Defendants	:	CIVIL ACTION NO. 98-19 (SLR)
CORDIS CORPORATION, Plaintiff vs. BOSTON SCIENTIFIC CORPORATION, et al., Defendants	:	CIVIL ACTION NO. 98-197 (SLR)

Wilmington, Delaware
Tuesday, December 12, 2000
9:07 o'clock, a.m.

BEFORE: HONORABLE SUE L. ROBINSON, Chief Judge, and a jury

Official Court Reporters

The second reason I wanted to introduce Dr. Collins, because he's going to be examined by my colleague and friend, Mike Timmons, who you've seen in the courtroom. Mike has been here every day. He has been running equipment. He knows this case, I can say, without fear of contradiction, better than any human being on earth. And he's going to examine the witness.

MR. TIMMONS: Thank you.

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... JOHN M. COLLINS, having been previously duly sworn as a witness, was recalled and testified further as follows ...

MR. TIMMONS: May I proceed, your Honor?

THE COURT: Yes, you may, Mr. Timmons.

MR. TIMMONS: Ladies and gentlemen of the jury. Thank you, Mr. Diskant, first off.

DIRECT EXAMINATION

BY MR. TIMMONS:

Q. Welcome back, Dr. Collins.

A. Thank you very much.

Q. We're going to talk today about one particular issue, whether or not the ACS stents infringe Claim 23 of the '762 patent.

Are you familiar with the stents that ACS has

sold in the United States?
A. Yes, I am.
Q. And what are they?
A. There are three brand names: A Multi-Link Duet and Tristar.
Q. And what did you do in order to familiarize yourself with those stents?
A. Basically reviewed a lot of information, as well as looking at stents. Looked at engineering drawings. Looked at pictures. Read a lot of documentation, both ACS documentation and other publications.
Q. Did you see photos of each of those three stents?
A. Certainly saw photos of all the stents, yes.
Q. In order to save some time, I've put some photos in the orange book next to you. I would first like to direct your attention to Plaintiff's Exhibit 3254-A and B.
Can you tell me what those are?
A. This is a photo, there were actually two photos, one of more or less the entire stent. The other is a closeup of the Multi-Link.
MR. TIMMONS: I would offer 3254-A and B into evidence.
MR. BRENEISEN: No objection.
THE COURT: So marked.
*** (Plaintiff's Exhibits No. 3254-A and 3254-B

were received into evidence.)
BY MR. TIMMONS:
Q. 3254-A. What is that?
A. I believe that's -- that is the Multi-Link.
Q. And B?
A. And B is the -- I'm looking at 3254-B?
Q. B.
A. Is the -- that's up there. That's a closeup picture of the Multi-Link.
Q. Okay. We'll get back to the detail shortly, but let's turn now to the next photograph we have, which is 3253-A and B. Tell me what that is?
A. That's a similar combination of pictures of the -- a full stent and then a closeup of the stent. In this case, it's of a Duet stent.
MR. TIMMONS: I offer 3253-A and B.
MR. BRENEISEN: No objection, your Honor.
THE COURT: Thank you.
BY MR. TIMMONS:
Q. Did you explain what this is a picture of?
A. Of the Duet stent. More or less, the entire stent.
Q. And B?
A. And B is a closeup of one portion of the stent.
Q. And, again, we'll get back to the details. Let's

look at 3252-A and B.
A. Mm-hmm. And this is, again, a similar combination. In this case, 3252-B is of the entire stent and 3252-A is a closeup of the entire stent for a Tristar stent.
MR. TIMMONS: I offer 3252-A and B.
MR. BRENEISEN: No objection, your Honor.
THE COURT: Thank you.
*** (Plaintiff's Exhibits No. 3252-A and 3252-B were received into evidence.)
BY MR. TIMMONS:
Q. Explain to the jury what 3252-B is, please?
A. That's a picture of the entire Tristar stent.
Q. And A?
A. And A is a picture of a blowup of a portion of that stent.
Q. One more thing that is -- let's show you first and I will offer it into evidence.
MR. TIMMONS: May I approach, your Honor?
THE COURT: Yes, you may.
(Mr. Timmons handed an exhibit to the witness.)
BY MR. TIMMONS:
Q. Plaintiff's Exhibit 2230. Could you tell me what that is, please?
A. This is a Multi-Link Duet stent.

Q. Have you seen Duet stents before?
A. Yes, I have.
MR. TIMMONS: I offer into evidence PX-2230.
MR. BRENEISEN: No objection.
THE COURT: Thank you.
*** (Plaintiff's Exhibit No. 2230 was received into evidence.)
BY MR. TIMMONS:
Q. Dr. Collins, for the purposes of your infringement analysis, is there any difference between the Multi-Link, Duet and Tristar stents?
A. No. Not for purposes of infringement analysis.
Q. And does BSC's expert agree with that?
A. Yes, he does.
Q. I'd like to direct your attention to PX-276, which is the Handbook of Coronary Stents. I think it's already in evidence. And Page 5, there's a discussion of the Tristar stent. What is ACS -- what does ACS say about the geometry of the Duet and Tristar stents?
A. Well, under the section of stent design, it says -- this is a description of the Tristar stent. And if you look at the characterization of the stent design, it's made in the exact corrugated ring pattern as the ACS Multi-Link Duet. So basically the stent, the metal pattern for the Duet and for the Tristar are identical.

Q. And let's take a look at that geometry now. Back a couple pages. Page 3 of the orange book.

Can you tell me what this is, generally?

A. Sure. Again, this -- there's a chapter in this book, the Handbook of Coronary Stents, which describes a number of stents, and this one chapter describes the Tristar. And here in the first page is an overall description of the Tristar is a balloon expandable stent made of a corrugated ring design with multiple rings connected with multiple links.

MR. TIMMONS: Can we do a split-screen with 3252-A, please?

BY MR. TIMMONS:

Q. You've already said that the Tristar is a balloon expandable stent. Do you see where it says corrugated ring design?

A. Yes.

Q. Would you explain to me what the corrugated ring design is?

A. Yes. Corrugated ring design is exactly the same thing -- it can be called a Palmaz ring. Corrugated ring, Palmaz ring. It's marketing speak for the same thing.

And you look at, for example, take a look at this area here, which is one of the corrugated rings. And what you will see, it's a Palmaz ring with a corrug --

with the corrugations being the serpentine pattern we talked about before with the Palmaz ring.

Q. Does the corrugated ring of the Tristar stent work the same way as the Palmaz ring in the '762 patent?

A. Exactly the same way, yes.

Q. Underneath corrugated ring it says multiple rings connected with multiple links. Using the Tristar, would you explain what that is?

A. Sure. As I was describing before, with a Palmaz ring, the way you can make a stent longer or shorter is by using more of the Palmaz rings. So here, we just see, you know, one, two, three, four, five, and you can have as many or as few as you wanted.

So that's what's meant by multiple rings in the stent here. And they're connected with multiple links.

In this case, you can see a link here, which connects this ring to that ring and you can't see it, but on the back side, there's another ring -- another connector. So there's more than one connector that connects each ring to its neighboring ring.

Q. And is there any difference between the geometry you see in the Tristar with the connections and the NIR stent connections that we learned about in the liability phase of this case?

A. Yes. Absolutely. And the differences stem from --

probably the easiest way to look at the differences is the fact that, if you remember when we were describing the NIR, we were talking about them as being out of phase, and that meant when you had the serpentines, that the peaks of the serpentines were aligned, where here, if you look at this pattern, you will notice that this part of the -- this slot (indicating) within the ring is in the same position as the one right next to it. So this is in phase.

So as a result, the end of one of the -- the ring portions is lined up with the -- the peak. One side, it's lined up with a valley of the other.

So if you look at how you connect one to the other, the distance is much, much longer, so the connector is much longer than the connector in the NIR stent. And it connects the peak of one serpentine ring to the valley, if you will, of the other serpentine ring.

Q. Does the connector have a link in the Tristar have any effect on how the corrugated ring expands?

A. No, not at all. The way this expands is driven by the Palmaz ring, or the corrugated ring. That's what controls the expansion, as we talked about before. And the connector basically goes along for the ride.

Q. Can we focus in on the lower right-hand corner portion of the orange one, please? Great.

Hear it says, it provides high radial strength without compromising flexibility or uniform scaffolding.

Could you explain what in the Tristar provides high radial strength?

A. It's identical to the fundamental Palmaz and NIR, that the radial strength comes from the -- what they are calling the corrugated ring or the Palmaz ring.

MR. TIMMONS: If we could just focus in on the stent... Big screen. Thank you.

BY MR. TIMMONS:

Q. How is the -- how are all three ACS stents manufactured?

A. They're manufactured by starting with a stainless steel tube, and removing material from that. In this case, the material is removed by a laser process.

Q. How are the -- how is the embodiment in the '762 patent made?

A. The preferred embodiment of the '762 is identical. You start with a stainless steel tube and you remove material from that stainless steel tube.

Q. The commercial embodiments of the Palmaz/Schatz and Palmaz stents, how are they made?

A. Again, identical. Starting with a stainless steel tube and removing material from the stainless steel tube to create the pattern that you see.

Q. Are there any differences between the way that the Tristar is made and the way that the NIR stent is manufactured?

A. Yes. The NIR is manufactured starting with a flat sheet. You cut that pattern in the flat sheet and roll it up. In order to get the mechanical properties that you need, they're welded together. And as a result, you don't have -- in this product you don't have any weld points to worry about. And also we had talked about some of the U connectors that would spring back a little bit after being formed, and they potentially would protrude off of the surface a little bit.

We don't have any similar kind of U connectors or any protruding surfaces on the ACS design.

Q. So the lack of U's protruding and the lack of welds on the Tristar stent and the other ACS stents, does that have any effect at all on your infringement analysis of Claim 23?

A. Particularly as compared to the NIR analysis, it makes it a much more straightforward analysis to do, because you don't have to worry about, you know, whether or not the weld is important, whether or not the U is projecting off a little bit more. Everything made here is from the stainless steel tube and all on one cylindrical claim.

Q. Let's turn to Claim 23. I will ask for PX-3, which is in evidence.

During the liability phase, we looked at the NIR stent in two different ways. First, as each segment being the tubular member and then the stent as a whole being a tubular member.

Can we do that for the ACS stents also?

A. Absolutely. Analysis can be done identically.

Q. Do you have an opinion as to whether or not the ACS Multi-Link Duet stents and Tristar stents infringe Claim 23 of the '762 patent?

A. I have an opinion. And that's that they do, indeed, infringe.

Q. That's true whether you look at the Tristar or any of the ACS stents as a whole or each as a corrugated individual ring?

A. That's right. Either way of looking at it, my conclusion is the same.

Q. Let's turn to each of the individual claim elements. And the first one is expandable intraluminal vascular graft, comprising. Are the ACS stents an expandable intraluminal vascular graft?

A. Absolutely. They're marketed and sold that way as stents.

Q. That's another way of saying stent?

A. Absolutely. (Absolutely above)
Q. Next element. A thin-walled tubular member having first and second ends. And let's focus in on thin-walled first.
Do the ACS stents satisfy the thin-walled requirement?
A. Certainly. When you look at the thin-walled requirement, the wall has little extent from one side to another. The purpose of that is to allow it to be balloon expandable, what we've talked about before. In this case, the stent is certainly balloon expandable and the material thickness is on the order of 5-1/2 thousandths of an inch, which is obviously quite small.
Q. Dr. Collins, we've placed on the left-hand side the Court's definition. And do you understand that the -- that definition of thin-walled requires that it be thin-walled to both its first and second diameters?
A. Yes.
Q. The ACS stents, are they thin-walled, first and second diameters?
A. Yes. The wall, it's difficult to see it when you look at the stent as a whole, but when you expand it from the first diameter to the second diameter, the material does not change. The material's thickness stays the same.
Q. That's true for both the corrugated ring and the

stent as a whole?
A. Absolutely, yes.
Q. The second part of this element is tubular member. Do the ACS stents meet this claim definition?
A. Yes, they do. Again, you can look at it either as the stent as a whole or each one of the Palmaz rings or corrugated rings being a tubular member. That they're hollow, elongated, cylindrical structure with two ends. And you look at it as the stent as a whole, there's absolutely no question but that it's elongated. It's much longer than it is in diameter. But when you look at each one of the ring elements, there are some designs, like the Multi-Link, in which the length of the ring element is a little bit shorter than its diameter, where for the Duet and Tristar, it is a little bit longer than its diameter.
Q. Let's recap for a second.
So when you look at the stent as a whole, it meets the tubular member element literally?
A. Exactly. Absolutely.
Q. And if these individual rings are elongated, also --
A. Correct.
Q. Let's talk about the situations where this ring is not elongated.
A. Okay.
Q. Do you have an opinion as to whether or not that

non-elongated corrugated ring as an equivalent of an elongated tubular member?

A. Absolutely. The reason, from an engineering perspective in particular, what matters is that you have a slot and that slot is longer than it is wide and whether or not the whole ring happens to be a little bit more, a little bit less than a ratio of one, it does not matter at all.

Q. During the liability phase of this case, we talked about a very similar analysis of the NIR stent. We went through the function, way and result of an elongated tubular member under the '762 patent.

In your opinion, do the corrugated rings of the Multi-Link or the ACS stents, are they the equivalent of an elongated tubular member?

A. Yes, they are, in that they provide the same function, do it in the same way and give you the same result.

Q. Is -- what is -- do the individual rings of the ACS stents expand and support tissue whether or not they're elongated?

A. Absolutely.

Q. Is that the identical function to the Palmaz/Schatz? The Palmaz tubular member, if it's elongated?

A. That's correct.

Q. Do the corrugated rings of the ACS stents perform this function in the same way as a tubular member of the '762 patent?
A. Yes, they do. And again the way this expands is the balloon will start to push the stent out. The bars or struts bend and they plastically deform as they expand in diameter, and the surgeon is allowed to control that expansion, and there's no springiness in that process because of the plastic deformation process.
Q. And the corrugated rings of the -- of the ACS stents that aren't elongated, do they achieve the same result as the elongated tubular member of the '762 patent?
A. Absolutely. They provide uniform support to the tissue wall and they do it in a way that allows a surgeon to control what the final diameter is. Once it's reached that final diameter, it stays where the surgeon wants it.
Q. So, in your opinion, does the -- do the ACS stents meet the thin-walled tubular member having first and second ends as claim element?
A. Absolutely, yes.
Q. Let's turn to the next claim element: A wall surface disposed between the first and second ends.
Do the ACS stents meet this definition?
A. Most definitely. Here, the definition is that the outer surface of the tubular member must be disposed in a

common cylindrical plane. Well, you start with a cylinder and then material is removed from that cylinder. So you don't have to worry about bumps or anything else. This is a very straight cylinder from which material is removed and certainly meets that -- that definition exactly.

Q. The lack of U's and welds, does that have any effect in your analysis of this claim element?

A. Basically, I think it makes the analysis much more straightforward and much simpler thing to look at.

Q. So it's -- it's simpler than the NIR analysis?

A. Much more simpler than the NIR analysis, correct.

Q. The next claim element is a wall surface having a substantially uniform thickness.

Do the ACS stents meet this claim element, whether or not we look at them as corrugated rings or as a stent as a whole?

A. Absolutely. Again, you start with a stainless steel tube. These tubes are made of medical grade metal. In the manufacturing process, their wall thicknesses are very carefully controlled. And then material is removed from that, etching out the pattern, which leaves you with a uniform wall. You look at multiple rings, they're all made from the same tube, so they all have the same uniform wall thickness.

Q. What has to have a substantially uniform thickness,

just to be clear?
A. If you will, the struts, the struts are what -- are the metal that make up the stent, and they have to be of uniform thickness.
Q. That's the metal that basically surrounds the slots?
A. That's correct.
Q. And directing you again to the Court's definition, it's requires that the wall surface be substantially uniform, both at its first and second diameters.

Is the material surrounding the slots the same thickness in both the first and second diameters, once the ACS stents are expanded?

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A. Absolutely. As the stent expands, the wall thickness, material does not change. You can see that, from the first diameter to the second diameter, it stays the same.
Q. Let's go on to the next claim element, which is a plurality of slots formed therein.

In your opinion, does the ACS stent meet the plurality of slots claim?

A. Absolutely. You can see there are a number of slots as you go around the circumference. The Palmaz ring, it's made up of slots, multiple slots.

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A. (Continuing) And certainly as you start to couple multiple rings together, there are just more slots.
Q. And you talked earlier about how the stents are formed. Do these stents -- does the manufacturing process of the ACS process comply with the --
A. Absolutely. They do it in an identical way as the preferred embodiment.
MR. TIMMONS: The next element, please.
BY MR. TIMMONS:
Q. Are the slots disposed substantially parallel to the longitudinal axis of the tubular member?
A. They certainly are. The easiest way is probably looking at the blowup. You can see the orientation of a slot, which is along the axis of the stent.
Q. And does that geometry have any importance as to how the stent works?
A. It's absolutely critical to the functioning. It provides the space for the stents to open up and plastically deform.
Q. Is that anything like the coil stents we talked about during the liability phase?
A. No. It's 180 degrees literally from the coil stents where the openings are perpendicular to the axis. It's identical to the Palmaz ring design.

Q. Just a couple more elements. The next one is the tubular member have a first diameter. Do the ACS stents meet that first element?
A. They have a first diameter which allows it to be delivered to the site.
Q. A second diameter?
A. Yes. Second diameter is expanded and deformed diameter. When you apply a pressure from the balloon, it opens it up, plastically deforming the walls and generating a larger deformed diameter.
Q. And the very last element in Claim 23 requires that the outside of the wall surface of the tubular member be smooth in the first diameter.

Do the ACS stents meet this claim element?

A. Absolutely. You are starting with a smooth stainless steel tube and you are just removing material from it. So it is.
Q. Again, U's not protruding or no U's at all and the welds. Does that make any difference?
A. It makes the analysis that much more straightforward to do.
Q. It means to you that this is a smooth surface?
A. Smooth surface. No question.
Q. Just to sum up, what's your opinion as to whether or not the ACS stents meet Claim 23 of the '762 patent?

A. I think we've gone through each one. I've had no question but each of those stents meet all of the claim elements in Claim 23.

Q. Let's turn to something a little bit new, and I just want to talk to you a little bit about BSC's position on whether or not ACS meets these claim elements.

And do you understand that the -- that BSC and its experts assert that the -- each ring upon expansion is a little bit flaring at the end of those rings?

A. Yes, I do understand that.

Q. Does this position have any effect in your infringement analysis of Claim 23?

A. No. I've looked at it and I believe it has absolutely no impact at all in any of the claim elements. Therefore, it has no impact on my decision.

Q. Let's look at this flaring, and it's in PX-276 at Page 344 in the orange book. Focusing on the top.

Can you explain what we're seeing here?

A. Sure. This is a -- an ACS, a Multi-Link stent, which is expanded to its second or expanded diameter. And the flaring that you're talking about is probably best seen by looking at the ends. And, again, it's always hard to look at a three-dimensional product like this in the two-dimensional image and really have a sense.

But if you look at, for example, that part of

the ring, you can see it appears to be canting out a little bit. You can see an element out here that's can't go out a little bit, and that's the flaring you're referring to.

Q. Is that the Multi-Link stent?

A. Yes.

MR. TIMMONS: Can we do a split-screen? What we're going to do is put up one of the pictures that Dr. Snyder has attached to his expert report.

(Pause while counsel conferred.)

MR. TIMMONS: Is it all right, your Honor? There's no objection.

Flip it around, so we can be in the same orientation.

BY MR. TIMMONS:

Q. Tell me what's shown in this picture from Dr. Snyder.

A. This is a stent that I understand was implanted in a pig artery, a non-diseased pig artery, and then excised and cleaned up in and a picture was taken of it.

Q. Is this also a Multi-Link stent?

A. Yes.

Q. Do you understand that the ACS stents may flare upon expansion?

A. Sure. Yes.

Q. What, if anything, are factors that may control

the amount that it flares upon expansion?
A. There are a number of design parameters and expansion rates, but equally important is the -- are the conditions under which it's expanded. You can imagine if it's expanded in air, and I don't know for a fact, but I believe the one on the left was expanded in air. There's no force on the outside which is going to tend to push these struts back onto the surface.

If you go to the extreme and expand it in a very rigid vessel, you're going to be squeezing the stent up against the wall and it's going to conform to the balloon much more carefully.

Or an intermediate position, where you've got some resistance, where you will have from a healthy pig tissue that's going to tend to keep the flaring to a minimum.
Q. To the extent -- can you explain the differences between expanding the stent in a healthy artery and a diseased artery?
A. As an engineer, the differences I will be looking at are what are the external forces in the geometry that you are expanding into. So if you are expanding into a perfectly uniform geometry, a constant -- constant material characteristics, you'll get one result. If you are expanding into something which is highly not uniform

and highly not rigid, basically, the idea is to have the stent conform to that tissue wall in its expanded stent.

So you get a very different result, depending on the nature of the tissue into which you are expanding the stent.

Q. No matter the extent of flaring in these stents upon expansion, does it have any effect at all on your analysis of the infringement of Claim 23 by the ACS stents?

A. No, because it does not impact any of the claim elements in Claim 23.

Q. We are going to go back very shortly to the claim elements and what we've done is taken Judge Robinson's instructions from the liability phase. I would like to run through a couple of those claim elements that do talk about second diameters.

And the first one -- I've gone through these and highlighted places where it talks about first and second diameter. First one is thin-walled. We talked about that a little bit already. You understand that the Court's definition requires that it be thin-walled in both the first and second diameter?

A. Yes, I do.

Q. Even in spite of this flaring, are the ACS stents still thin-walled in the second diameter?

A. Certainly. Material thickness does not change from

its first diameter to second diameter. It's thin-walled to begin with.

Q. Does the flaring have any effect on your analysis that the ACS stents meet this claim element?

A. No, it does not impact it at all.

Q. The second one we've called out is substantially uniform thickness. That requires that it be at both the first and second diameters.

And we talked about that it was a thickness of a material that surrounds the slots. Does that thickness change when the stent expands?

A. No. It stays the same going from the first diameter to the second diameter.

Q. The way I understand it, Dr. Snyder measured the distance at the end of the ring flares off the surface --

MR. BRENEISEN: Your Honor, objection. This has been quite a bit of leading testimony and I think he should ask the witness a straight question.

THE COURT: It is leading. Rephrase.

BY MR. TIMMONS:

Q. How do you understand that Dr. Snyder analyzed the substantially uniform thickness of the ACS stents?

A. Well, what I understand he did was he took one stent, which was implanted in a pig artery, and measured the height of that stent, or the elements of the stent off

of a hypothetical plane. So basically he was measuring heights and not measuring thicknesses at all.

Q. Do you have any problem with his particular measurements of that height?

A. No. I'm sure that the analytical techniques that he used in the lab were perfectly reasonable and acceptable, but certainly to characterize one test from a pig as a representative sample for what would happen in human condition would be a stretch, and I don't know that he's making that claim, but I certainly would not support it.

Q. Was that pig artery diseased or non-diseased?

A. My understanding is it was non-diseased.

Q. For the purposes of this analysis, I'm going to ask you to accept Dr. Snyder's methodology. Can you do that?

A. Sure.

Q. Does the flaring that Dr. Snyder found have any relevance to your infringement analysis?

A. No. It really does not. Again, it does not impact any of the claim elements.

Q. Does the measurement that Dr. Snyder did have anything to do with substantially uniform thickness as claimed in Claim 23 of the '762 patent?

A. No, it doesn't.

Q. Why not?

A. Again, what he measured was the height, the

thickness of the material is the thickness of the -- the stainless steel tube at the beginning, and that does not change.

Q. Do the ACS stents meet the claim elements of substantially uniform thickness, despite the flaring?

A. Absolutely.

Q. We're done with the Court's definition, but I would like to turn back to the claim for one second. I will focus you in on a claim element that a -- the tubular member having a second, expanded and deformed diameter. Is this consistent with how you understand the ACS stents are expanded?

A. Yes.

Q. Is there anything in this claim element that concludes or requires flaring?

A. No. Not at all.

Q. And does the ACS stent, upon expansion, even though it flares, meet that claim element?

A. Yes, it does.

Q. And let's turn to wall surface, the Court's definition of that.

The outer surface of the tubular member must be disposed in a common cylindrical plane.

Does that definition address second diameter?

A. No, it does not.

Q. Is that definition consistent of your understanding of how stents work?
A. Absolutely. Start with the stent and it's in its deliverable form. You bring it to a lesion site and then you expand it. You know, the concept of having a second diameter in a human, which is a perfect -- perfect cylinder, you know, I'm sure it's happened at one point because of probability, but I can't imagine it's happened more than once.
Q. So this definition reflects the reality?
A. Absolutely.
Q. I understand BSC may argue there must be a wall surface in a common cylindrical plane in the second diameter in addition to the first diameter. I want you to assume that they're correct for this analysis. Can you do that?
A. Yes.
Q. Under that assumption do the ACS stents still meet claim element wall surface?
A. It very well could, depending on the extent of flaring, because, again, nothing is ever perfect, and even though a common cylindrical plane, it does not mean that one molecule might be off or not. So I have not seen data that really quantifies the amount of flaring. I could believe that the flaring will be some larger and some

smaller, depending on the operating conditions.
Q. Do you have an opinion as to whether or not the ACS stents with flaring may be the equivalent of a wall surface where the outer surface of a tubular member must be disposed in a common cylindrical plane in a second diameter?
A. Absolutely. The purpose is to uniformly expand and support the tissue wall so it does not collapse and it's identical.
Q. Is that the function of the wall surface?
A. Yes.
Q. Does the wall surface of the ACS stents perform that function, whether or not they are disposed in a common cylindrical plane upon expansion?
A. Absolutely, yes.
Q. What is the way that the wall surface with a substantially uniform thickness of the '762 patent performs that function?
A. Well, it does it by expanding uniformly and it expands uniformly because it has a uniform wall thickness and again it expands uniformly.
Q. Does the wall surface of the ACS stents perform this function in the same way?
A. It certainly does, yes.
Q. What is the result of the wall surface of the '762

patent?
A. The result is the result that we talked about with the Palmaz ring. You get something that can be expanded, plastically deformed to the diameter that the surgeon wants and it's no longer elastic wants it gets there. And it provides uniform support for the tissue wall.
Q. Finally, does the wall surface achieve the same result?
A. Absolutely.
Q. In the ACS stents?
Do all of the ACS stents have a wall surface that meet the claim element, despite not being in a common cylindrical plane upon expansion?
A. Yes. That's not required and, yes, it's not required.
Q. One more topic. You understand that in the damages phase we're talking about what stents that are on the market infringe the '762 patent as noninfringing alternatives?
A. That's my understanding, yes.
Q. Can I show you PX-3699 that's in evidence? Mr. Croce described as illustrating the successful competitors of Cordis in the stent market. I want to run through these.
An AVE stents infringe Claim 23 of the '762

patent?
A. Yes.
Q. BSC stents, NIR stent, infringe Claim 23 of the '762 patent?
A. Yes.
Q. As we've talked today, ACS, Multi-Link, Tristar, infringe Claim 23 of the '762?
A. Yes, they do.
MR. TIMMONS: Nothing further.
THE COURT: All right. Cross-examination? Mr. Breneisen?
MR. BRENEISEN: Thank you, your Honor.
Good afternoon, ladies and gentlemen.

CROSS-EXAMINATION

BY MR. BRENEISEN:
Q. Good afternoon, Doctor.
A. Good afternoon.
Q. Dr. Collins, I understood your testimony earlier that you did not take any issue with Dr. Snyder's methodology and his testing of stents?
A. I didn't take any issue with Dr. Snyder having a stent and doing an accurate measurement of a stent on a mandril in terms of the heights of the various elements. I'm sure that was done accurately. I'm not sure, but I'm confident.

- VOLUME P -
IN THE UNITED STATES DISTRICT COURT
IN AND FOR THE DISTRICT OF DELAWARE

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CORDIS CORPORATION, Plaintiff vs. MEDTRONIC AVE, INC., et al., Defendants	:	CIVIL ACTION NO. 97-550 (SLR)
MEDTRONIC AVE, INC., Plaintiff vs. CORDIS CORPORATION, et al., Defendants	:	CIVIL ACTION NO. 97-700 (SLR)
CORDIS CORPORATION, Plaintiff vs. BOSTON SCIENTIFIC CORPORATION, et al., Defendants	:	CIVIL ACTION NO. 98-197 (SLR)

- - - - -

Wilmington, Delaware
Tuesday, December 19, 2000
9:00 o'clock, a.m.

- - - - -

BEFORE: HONORABLE SUE L. ROBINSON, Chief Judge, and a jury

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Official Court Reporters

determined by the metal that's in that serpentine, where the connector does not have any impact on it at all.

MR. TIMMONS: If we can go to the bottom of the page on the left-hand side...

Pull up the paragraph under Figure 1.1, please.

BY MR. TIMMONS:

Q. The description of the Multi-Link Tristar says that it provides high radial strength in the second-to-last line there. Could you describe for me what in the ACS stents provide high radial strength?

A. Just as we described before, the strength comes from the Palmaz ring. In this case, they're calling it the corrugated ring.

Q. Let's turn to another subject, and that's manufacturing.

During the liability phase of this case, we've heard a lot of testimony about how the manufacturing of the AVE stent, the fact that it was made from bent wire, differentiated it from what we call slotted tube designs.

Is that an issue for the ACS stents?

A. No, not at all. The ACS stents are actually fabricated by starting with a piece of stainless steel tubing, and the pattern is cut into that stainless steel tubing to form the final product.

words have to be in his report.

MR. UNDERHILL: Even the concept, your Honor.

THE COURT: Even the concept? Well, this is an expert. I'm not going to go that far, Mr. Underhill. You can answer the question.

BY MR. TIMMONS:

Q. Let me rephrase it. Dr. Collins, what is your understanding of how AVE describes the ACS stents?

A. That it's a -- a slotted tube stent in the marketing parlance that we had talked about before.

Q. If we could go back to the orange book, PX-276, at Page 5. And, again, let's go back to stent design.

A. Mm-hmm.

Q. How does ACS describe how the stents are made?

A. As I was indicating, that under stent design, it's laser cut from a stainless steel tube in the exact corrugated ring pattern as the ACS. So the Tristar is, you start with a stainless steel tube, and then you use a laser to cut a pattern, and that pattern produces the pictures that you had seen just previously.

Q. Is that true also for the Duet and Multi-Link?

A. Yes. Yes. Absolutely.

Q. How does this laser cutting from the stainless steel tube compare to the manufacturing process that is disclosed as the preferred embodiment in the '762 patent?

A. It's identical to what was disclosed in the patent.
Q. And this manufacturing process for the ACS stents, how does that compare to the way that Cordis manufactured the Palmaz/Schatz stent?
A. Also identical.
Q. How are the AVE stents made?
A. The AVE stents are made starting with rod stock, solid material, from which a ring is fabricated, and that ring is then formed into a Palmaz ring by creating the serpentines and then multiple rings are assembled together using the laser fusion process to create a connector between the rings.
Q. Let's focus in on a little bit on that connector or the weld. And I'd like to direct your attention to PX-3257, which are pictures of the GFX stent and that's in evidence.

MR. TIMMONS: May I approach, your Honor?

THE COURT: Yes, you may.

(Mr. Timmons handed an exhibit to the witness.)

BY MR. TIMMONS:
Q. And we've put a picture of the GFX stent, a closeup, on two of the segments on the screen.

Let's focus in on that weld. Tell me about the weld and what the geometry is of the stent.
A. Sure. You can see the weld in this region right

you start with a cylinder, and then you remove material from that cylinder. So, certainly, the materials that are left remain on the common cylindrical plane.

Q. And the fact that the ACS stents don't have the weld like the GFX, does that have any effect on your analysis of this particular claim element?

A. Once again, it's another issue. You don't have to worry about it. It makes things that much more straightforward to analyze.

Q. Let's go on to next claim element, a wall surface having a substantially uniform thickness. Do the ACS stents meet this definition?

A. Yes, they do. Again, going back to the fact that it's fabricated from a thin-walled tube, which has a uniform wall thickness removing material, everywhere the wall thickness remains the same, which is the wall thickness of the initial tube.

Q. And the Court's definition of substantially uniform thickness requires that substantially uniform thickness be both at its first and second diameters. Is that true of the ACS stents?

A. Absolutely true. Again, when you expand it, you're just bending the metal. You're not changing the thickness of the metal.

Q. What has to have substantially uniform thickness under

this claim?
A. It is the metal itself. It's the struts. That's what the stent is.
Q. Let's go on to the next claim element, which is plurality of slots formed therein. Plurality of slots.
Do the ACS stents meet this claim element, plurality of slots?
A. Definitely. It's more than one slot and a slot is long narrow opening. You can see here, here's a slot cut two in and you go around the circumference of any one element and you'll see there are multiple slots. Certainly, then, as you replicate those ring portions, you'll have more and more slots.
Q. And the second part of this requires that the slots must be formed in the wall surface of the tubular member as by the removal of the material.
Do the A -- are the ACS stents formed that way?
A. Absolutely. You start with a cylinder and you remove the material from the wall.
Q. Next claim element is slots disposed substantially parallel to the longitudinal axis of the tubular member.
Do the ACS stents meet this claim --
A. Yes. You can look at any of the slots. Take that one as an example. You can see its axis runs in that direction, which is parallel to the axis of the stent.